GREAT EAST LAKE 2016 WATER QUALITY REPORT 1 CENTER

SITE STATUS SUMMARY OF CONDITIONS

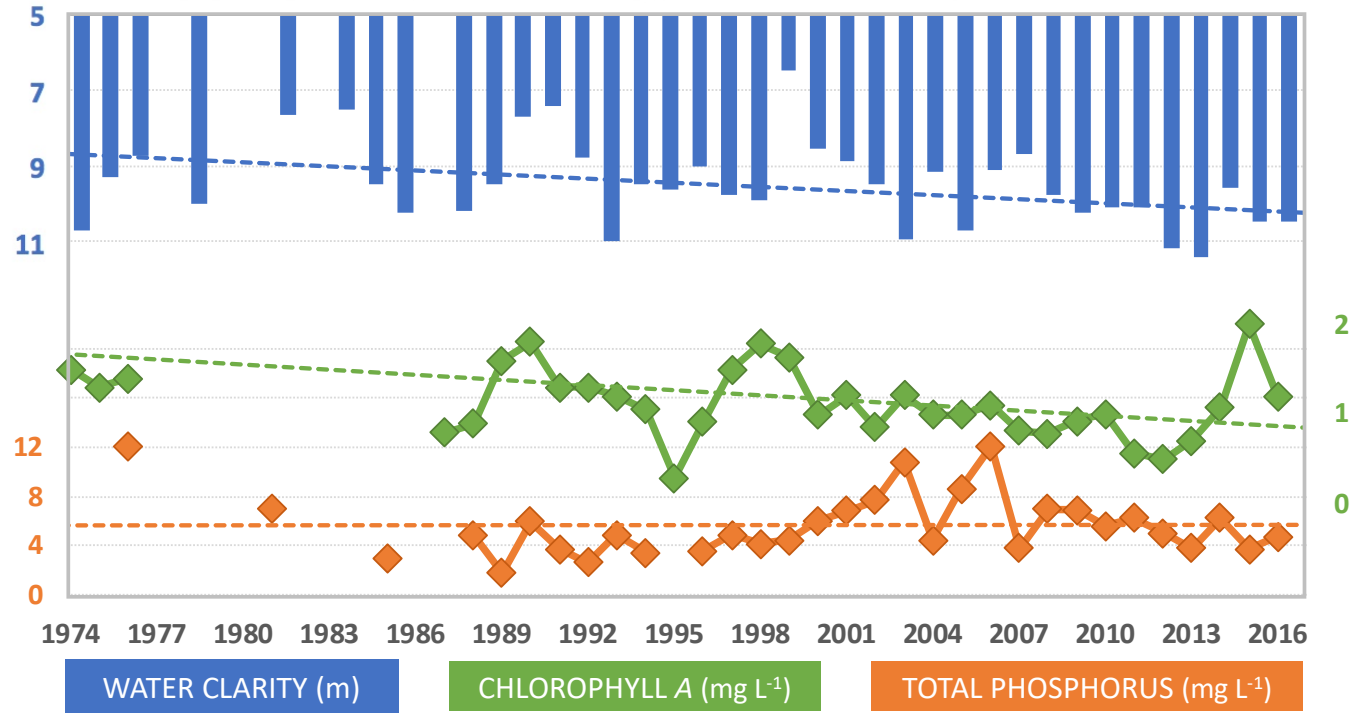
11.6	WATER CLARITY
4.4	TOTAL PHOSPHORUS
1.2	CHLOROPHYLL *A*
8.6	DISSOLVED OXYGEN

TROPHIC STATE OLIGOTROPHIC

At site 1 Center, water quality is generally excellent. Increasing water clarity and decreasing chlorophyll concentrations show improving water quality.

TREND degrading | improving | flat | too few data **CURRENT** poor | good | excellent | no data

SITE RESULTS ANNUAL WATER QUALITY PATTERNS



LAKE BASICS BACKGROUND INFO

Site Depth	1 Center – 102 feet
Lake Max/Mean Depth	102 feet / 35 feet
Location	Wakefield, NH & Acton, ME
Watershed Area	15.5 square miles
Lake Area	1,707 acres
Shore Length	18.7 miles
Lake Volume	75.6 million cubic meters
Flushing Rate	0.3 times per year
Lake Elevation	573 feet

Extension

GREAT EAST LAKE 2016 WATER QUALITY REPORT 2 CANAL BASIN

SITE STATUS SUMMARY OF CONDITIONS

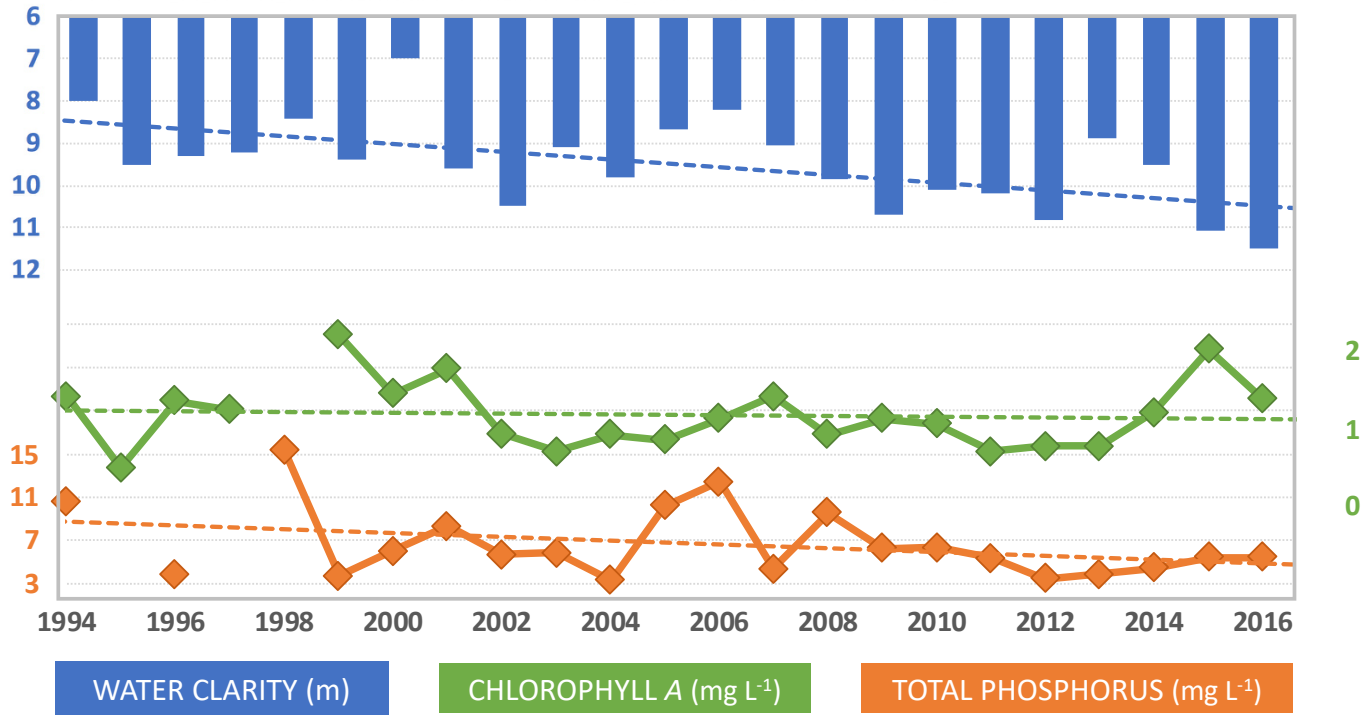
11.5	WATER CLARITY
5.5	TOTAL PHOSPHORUS
1.4	CHLOROPHYLL *A*
	DISSOLVED OXYGEN

TROPHIC STATE OLIGOTROPHIC

At site 2 Canal Basin, water quality is generally excellent. Increasing water clarity and decreasing phosphorus concentration shows improving water quality.

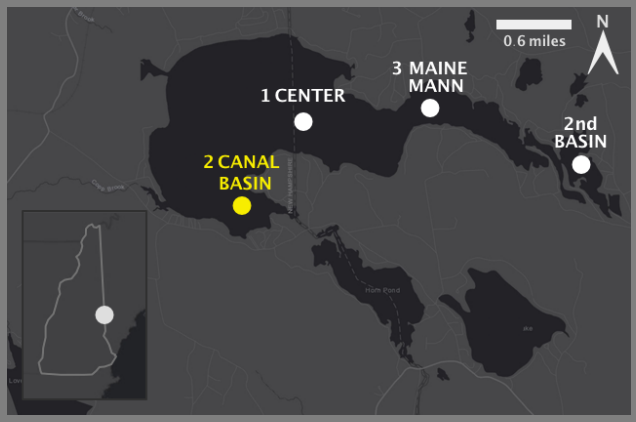
TREND degrading | improving | flat | too few data **CURRENT** poor | good | excellent | no data

SITE RESULTS ANNUAL WATER QUALITY PATTERNS



LAKE BASICS BACKGROUND INFO

Site Depth	2 Canal Basin – 60 feet
Lake Max/Mean Depth	102 feet / 35 feet
Location	Wakefield, NH & Acton, ME
Watershed Area	15.5 square miles
Lake Area	1,707 acres
Shore Length	18.7 miles
Lake Volume	75.6 million cubic meters
Flushing Rate	0.3 times per year
Lake Elevation	573 feet



Extension

GREAT EAST LAKE 2016 WATER QUALITY REPORT 3 MAINE MANN

SITE STATUS SUMMARY OF CONDITIONS

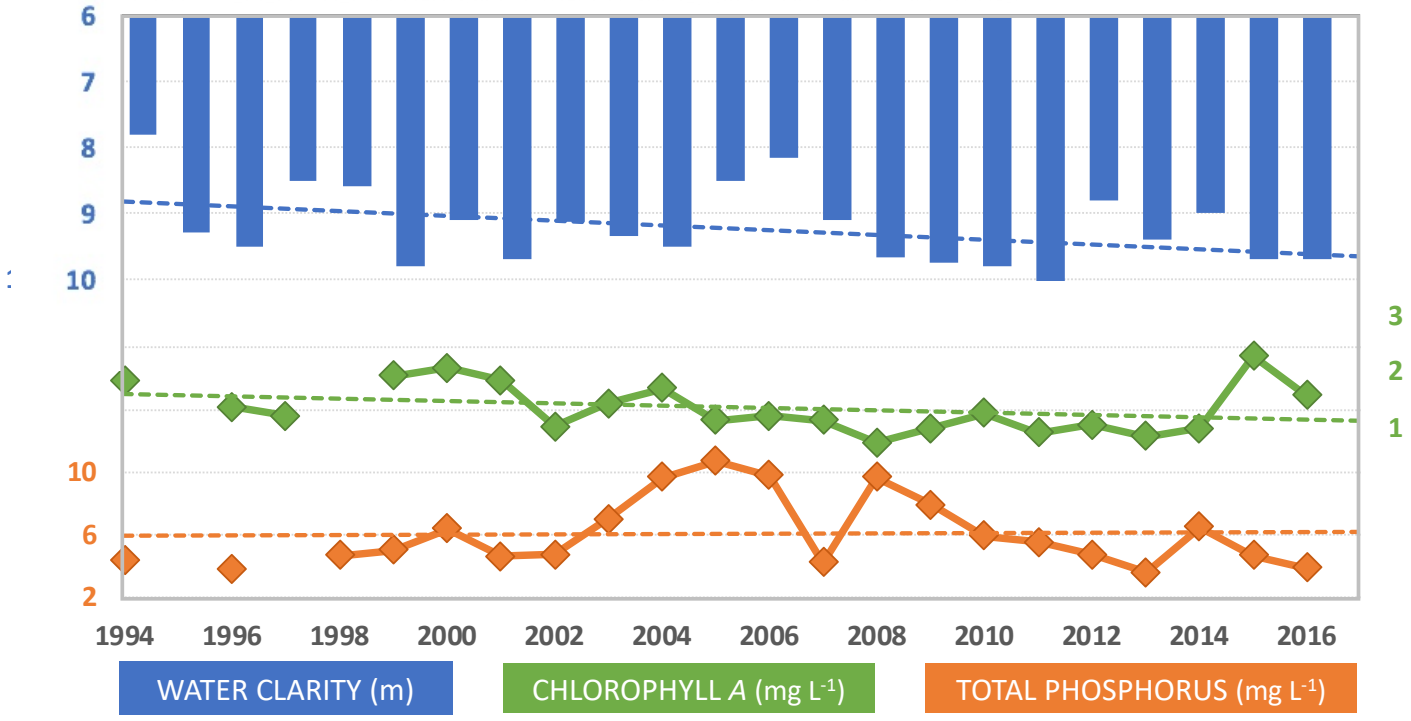
9.7	WATER CLARITY
3.9	TOTAL PHOSPHORUS
1.6	CHLOROPHYLL *A*
	DISSOLVED OXYGEN

TROPHIC STATE OLIGOTROPHIC

At site 3 Maine Mann, water quality is generally excellent. Increasing water clarity and decreasing chlorophyll concentration shows improving water quality.

TREND degrading | improving | flat | too few data **CURRENT** poor | good | excellent | no data

SITE RESULTS ANNUAL WATER QUALITY PATTERNS



LAKE BASICS BACKGROUND INFO

Site Depth	3 Maine Mann – 34 feet
Lake Max/Mean Depth	102 feet / 35 feet
Location	Wakefield, NH & Acton, ME
Watershed Area	15.5 square miles
Lake Area	1,707 acres
Shore Length	18.7 miles
Lake Volume	75.6 million cubic meters
Flushing Rate	0.3 times per year
Lake Elevation	573 feet

Extension

GREAT EAST LAKE 2016 WATER QUALITY REPORT 2ND BASIN

SITE STATUS SUMMARY OF CONDITIONS

5.5 WATER CLARITY

3.8 TOTAL PHOSPHORUS

2.2 CHLOROPHYLL *A*

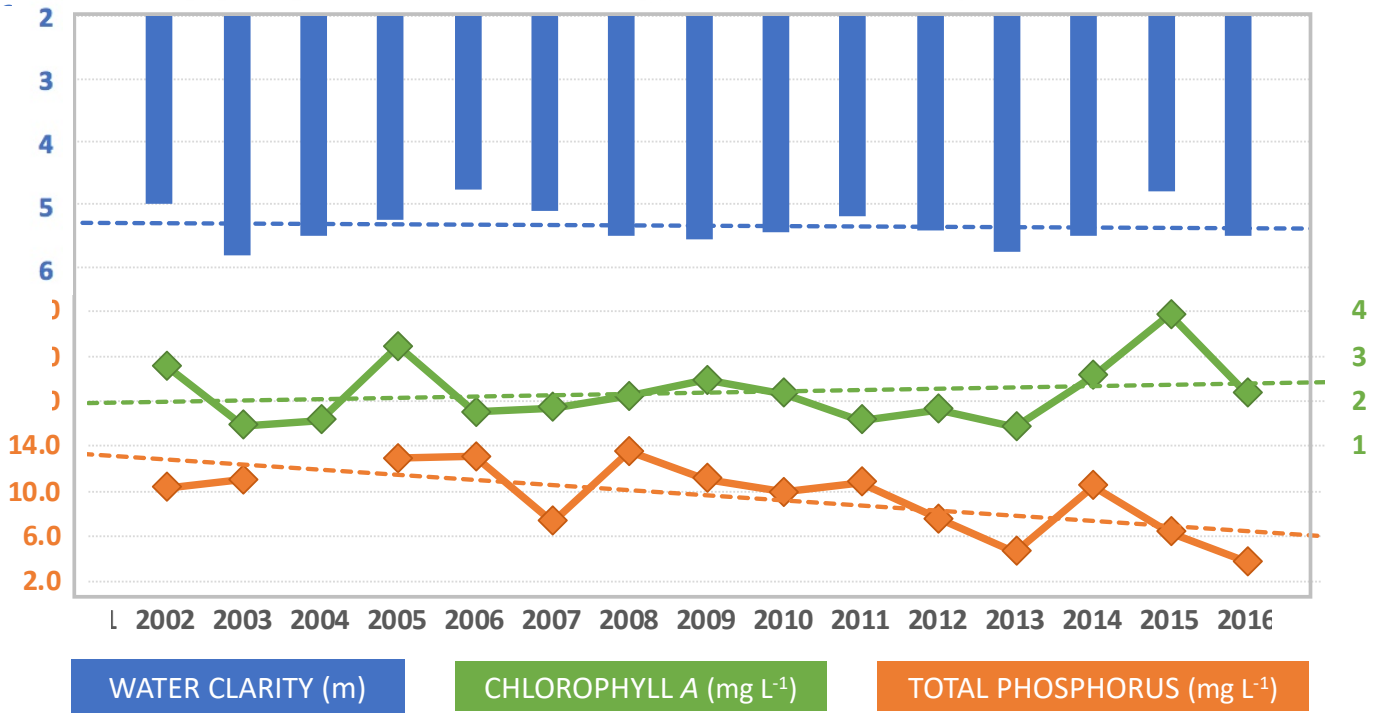
DISSOLVED OXYGEN

TROPHIC STATE OLIGOTROPHIC

At site 2nd Basin, water quality is generally excellent. Phosphorus concentrations are trending downward and water clarity is steady, but increasing chlorophyll concentrations may indicate other factors are driving algal growth.

TREND degrading | improving | flat | too few data **CURRENT** poor | good | excellent | no data

SITE RESULTS ANNUAL WATER QUALITY PATTERNS



LAKE BASICS BACKGROUND INFO

Site Depth	2nd Basin– 20 feet
Lake Max/Mean Depth	102 feet / 35 feet
Location	Wakefield, NH & Acton, ME
Watershed Area	15.5 square miles
Lake Area	1,707 acres
Shore Length	18.7 miles
Lake Volume	75.6 million cubic meters
Flushing Rate	0.3 times per year
Lake Elevation	573 feet

Extension

GREAT EAST LAKE 2016

LAKE STATUS AND FUTURE CONCERNS

PHOSPHORUS and **CHLOROPHYLL A** are likely higher in 2nd Basin as a result of a lower flushing rate

CYANOBACTERIA are found at times in the lake – *Gloeotrichia* has been found in the main lake, while 2nd Basin has experienced occasional blooms of *Anabaena*.

INVASIVES were found and removed from Great East in 2006 (variable milfoil) and have not returned.

WATERSHED RESTORATION EFFORTS by the Acton Wakefield Watersheds Alliance began in 2008 to help improve water quality. Work will be ongoing to achieve water quality goals.

Great East Lake is part of the Salmon Falls Headwater Watershed **MANAGEMENT PLAN**

WATER QUALITY REVIEW

LEARN MORE ABOUT LAKE HEALTH

LAKE PRODUCTIVITY is determined by multiple factors, including

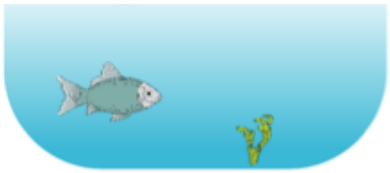
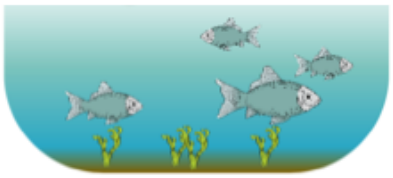
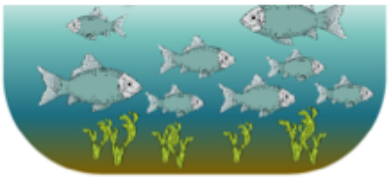
WATER CLARITY Water clarity is used as an indirect measure of algal productivity, but is also influenced by suspended sediments and dissolved color.

CHLOROPHYLL *A* A green pigment found in plants and algae, it is used to estimate algal biomass. Algal growth is promoted by phosphorus, increasing chlorophyll.

PHOSPHORUS A key nutrient that stimulates algal blooms and excessive plant growth, particularly for invasive species.

DISSOLVED OXYGEN Low dissolved oxygen can kill or stress organisms and release phosphorus from sediments, further degrading water quality.

LAKE TROPHIC STATE is generally broken into three categories

OLIGOTROPHIC	MESOTROPHIC	EUTROPHIC
		
DEEP	REDUCED	SHALLOW
LOW	MODERATE	HIGH
LOW	MODERATE	HIGH
HIGH THROUGHOUT WATER COLUMN	OCCASIONALLY LOW IN BOTTOM WATERS	FREQUENTLY LOW IN BOTTOM WATERS
MINIMAL PLANTS	MODERATE PLANTS	ABUNDANT PLANTS

LAKE AGING is both natural and accelerated by human activities

Lakes **NATURALLY** age or become more productive over thousands of years. In recent geologic time, humans have enhanced the rate of nutrient enrichment and lake productivity, speeding up this natural process to tens or hundreds of years.

HUMANS introduce excess phosphorus enters the lake in eroding sediment, groundwater (e.g. aging septic systems), or stormwater runoff, which contains fertilizers, detergents, or other phosphorus-based products. Algal blooms and uncontrolled sediment erosion along the shoreline can decrease water clarity, which can reduce shoreline property values.

NH Extension